

ORION

Full-feature, long-range, low-frequency variable depth sonar

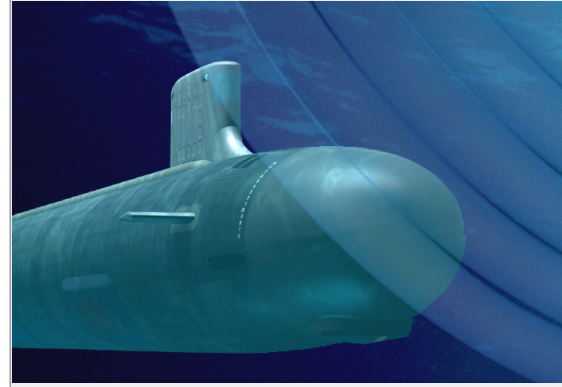
Orion variable depth sonar (VDS) is an anti-submarine sonar for use on small vessels, typically less than 300 tons, such as rigid hull inflatable boats (RHIBs), small patrol boats, unmanned surface and subsurface vessels and crafts-of-opportunity.

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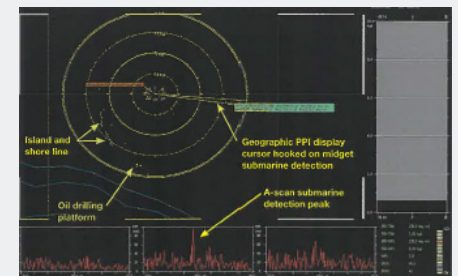
- > Orion has been optimized for operation in challenging shallow-water environments to detect and track submarines with low target strengths.
- > Orion is a compact, lightweight sonar with a small deck footprint; it's easy to install and cross-deck onto almost all small boats, manned or unmanned.
- > Orion largely uses COTS components, resulting in a low-cost, easy-to-maintain sonar system.
- > The system uses two parallel short receive arrays for instantaneous ambiguity resolution of the active signals and passive detections. This provides the signal discrimination performance of a much larger array in a compact, maneuverable package.
- > Orion's processing and display units use the latest open-architecture technology, making manned, remote control, or automated operations efficient and effective.
- > Modern processing and display capabilities allow easy operation with minimal training.
- > Affordable initial cost and low-cost operation ensures a cost-effective solution for years to come.



Orion Towed Subsystem



Orion and handling system outfitted on an 11-meter RHIB



Using proven technologies in new ways results in a low-cost, compact sonar system with consistent detection performance against submarines in challenging shallow waters.

SPECIFICATIONS

Operating Modes	Active, passive, test and playback
Source Level	210 dB/1 μ Pa @ 1 m (omnidirectional)
Operating Depth	>65 ft. (>20 m) bottom depth
Survival Speed	30 knots
Size	Tow Body: 52 in. x 16 in. x 29 in. (1.3 mx.4 mx.74 m) Inboard Electronics: Amp: 30 in. x 17 in. x 25 in. (.76 m x .43 m x .64 m) Processor: 19 in. x 13 in. x 3.5 in. (.48 m x .33 m x .09 m)
Weight	Tow Body: 450 lb. (204 kg) Inboard Electronics: Amp: 250 lb. (113 kg) Processor: 25 lb. (11 kg)
Platforms	Small surface crafts, USV's, large USV's
Receive Array (Twinline)	Length: 70 ft. (21 m), 2.2 in. dia, Weight: 150 lb. each, 300 lb. total (68 kg each, 136 kg total)
Deployment	Customized to each platform

ORION PROCESSING

Active Band	300 Hz
Processing	CW and FM
Pulse Lengths	Range-dependent, 0.313 sec. to 5.0 sec., max
FM Bandwidth	100 Hz and 300 Hz
Tracking	Auto and operator-initiated
Displays	PPI, bearing range, Doppler range, FM A-scan, geographic overlay
Range Scale	5, 10, 20 and 40 kyd
Passive Band	Continuous 100 Hz to 3,200 Hz
Processing	Broadband, narrowband, ALI, vernier and DEMON, torpedo alert
Displays	BTR, BFI, NALI, DEMON and LOFAR

SONAR PROCESSING

- > Active processing — state-of-the-art signal processing offers a comprehensive range of single and multi-pulse, FM and CW processing for detection and tracking.
- > Passive processing — 100-to-3,200 Hz continuous wideband coverage. Broadband, DEMON and narrowband analyzers, torpedo alert and extended tracking functions constitute a suite of passive tools to track and analyze targets.
- > Playback mode — playback is seamlessly integrated into passive and active operation, enabling post analysis of pre-recorded mission data, and is a key component to operator training.
- > Built-in test — power-up, continuous background and operator-initiated test modes combine to boost system availability and accelerate operations.

DISPLAYS AND OPERATOR

- > State-of-the-art workstation-based operator machine interface — trackball, point-and-click control, pull-down menu function and parameter selection allows easy access to key information.
- > Displays — a strategic balance of multifunction displays, built on a modern OpenGL framework offers flexible search, classification and geographic formats. Ground-stabilized, high-resolution color monitors capture details in the real-time processed sonar data.
- > Built-in operator aids — to simplify operation, Orion provides recommended mode/parameter settings, automated range-of-day estimation and data history recall.

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1025 W. NASA Boulevard
Melbourne, FL 32919
ProductSales@L3Harris.com